

Paved Shoulders

Making Rural Roadways Safer for All

Paved shoulders provide safety benefits for all road users. They are particularly important for improving comfort and safety for bicyclists and pedestrians traveling in rural and suburban areas.

Among all of the controlling criteria for rural highways, shoulder width has the largest effect on crash frequency.¹

Paved shoulders can:

- Reduce crashes for all users on the roadway.
- Provide separated space for bicyclists and increase their level of comfort.²
- Provide a stable surface separate from the travel lanes for pedestrians to use where sidewalks are not provided.
- Increase pavement longevity.
- Provide space for maintenance vehicles and temporary snow storage.

¹ National Academies of Sciences, Engineering, and Medicine 2014. *Evaluation of the 13 Controlling Criteria for Geometric Design*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/22291>

² Landis, B., Vattikuti, V., and Brannick, M. 1997. Real-Time Human Perceptions: Toward a Bicycle Level of Service. *Transportation Research Record*, 1578:119-126. DOI:10.3141/1578-15

³ Gan, A., Shen, J., and Rodriguez, A. Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects. BD015-04. Florida Department of Transportation, 2005.

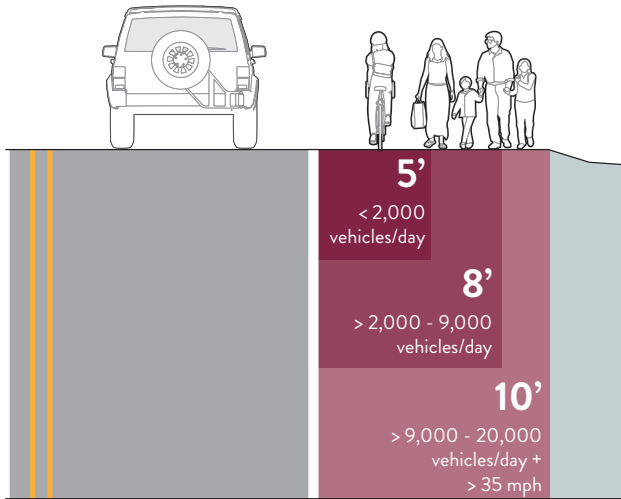
Benefits of Paved Shoulders

- 1 DEDICATED SPACE**
Paved shoulders provide a dedicated travel space for pedestrians and bicyclists on rural roads, especially when provided on both sides of the road.
- 2 COMFORT**
Wider shoulders with appropriately placed rumble strips can increase comfort.
- 3 ACCESS**
When paved shoulders are widened and roads are narrowed, reaching key destinations such as schools, parks, grocery stores, and homes can be much easier.

Paved shoulders can reduce pedestrian-walking-along-roadway crashes by

71%³

Providing Comfortable Widths



Recommended widths for paved shoulders based on the *FHWA Bikeway Selection Guide*.

The *FHWA Bikeway Selection Guide* recommends a preferable shoulder width of 5 feet on low-volume roads (2,000 vehicles/day or less) and up to 10 feet on roads with high speeds or high volumes of trucks.

- In constrained conditions, recommended shoulder widths may not be feasible. Balance non-motorized needs with right-of-way, grading, and wetland characteristics. A narrow shoulder is better than no shoulder.
- A minimum 6-foot paved shoulder is encouraged for trunk highways with shoulder rumble strips, and where there is existing or potentially significant bicycle travel.
- Shoulder widths with rumble strips which provide less than 4 feet of clear space should not be considered adequate for safe and comfortable bicycle travel.
- Refer to MnDOT Tech Memo No. 17-08-T-02 for further information on design flexibility and the design of shoulders with rumble strips.

Where To Use Them



Paved shoulders should be strongly considered in the following locations:⁴

Where There Are:

- Traffic volumes over 1,000 vehicles/day
- Speeds 50 mph and above
- Poor sight distances or steep grades
- Heavy vehicles make up more than 0% of traffic

Where People Walk & Bike:

- Existing or proposed local bike route or MnDOT Bicycle Investment Route⁵
- Schools
- Parks
- Grocery stores
- Homes

Paved shoulders should be prioritized on both sides of all rural roads where people are expected to be biking and walking.

⁴ American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities*, 5th edition, U.S. Department of Transportation, Washington, D.C., Forthcoming.

⁵ MnDOT's District Bicycle Plans <http://www.dot.state.mn.us/bike/district-bicycle-plans.html>

DESIGN RESOURCES

MnDOT: Performance Based Practical Design
MnDOT: Bicycle Facilities Design Manual
MnDOT: Road Design Manual
MnDOT Tech Memo 17-08-T-02: Rumble Strips and Stripes on Rural Trunk Highways

RELATED INFOSHEETS

Where To Expect People Walking